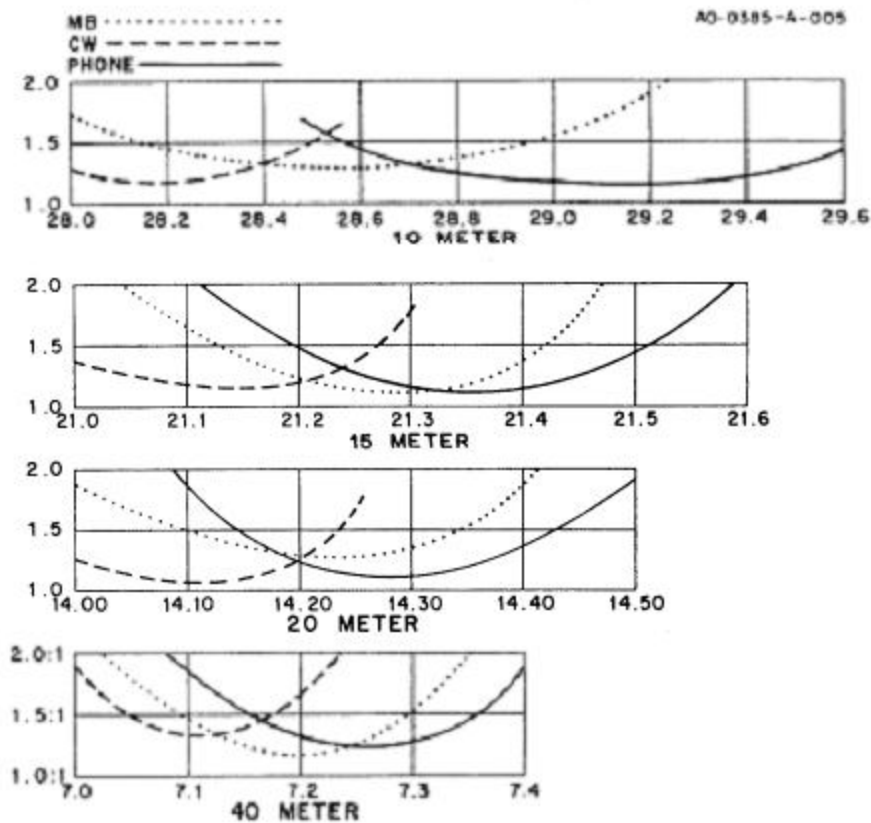


This is a typical meter that you would use to measure an antenna system. With it you can measure swr as well. This type of meter will only show you the swr at the frequency that you are currently on. How do you make an swr chart from this?

An swr chart reads frequency on the horizontal, and swr on the vertical scales.



When you use the wattmeter, you are only measuring the swr at one frequency. This would plot on the

swr curve at one point. You have to take a series of measurements to have enough points to connect the dots and make a curve out of it. To find the swr, you can use the formula for finding swr with a known forward and reflected power, or you can read the scale on the meter if it is provided, like the version shown.

You can start at the top, bottom, or middle of the band to take samples. It is usually easier to start at the lower frequency and work your way up. Each sample should be close enough to make a good graph, but wide enough that you don't take a lot of time. A good number is every 25 or 50 khz on the band. Each time you make an entry, connect it to the previous dot that you made. Soon you will be able to tell if the curve is going up, down, or forms a line. Continue making new points until you have determined the general shape.

On the graph, draw a horizontal line at the 2:1 swr point. Every point below this line is a usable frequency with most radios, with no antenna tuner requirement. This is your bandwidth for this antenna model. Figure 2 shows examples from a typical antenna manual, and your swr curve should look something like this. The bottom of the curve is the resonant frequency. It should be below 1.5:1 for normal most antennas.

If the antenna is resonant outside the band, The swr will be lower at the band edge than it will be toward the middle of the band. Knowing this information can be useful in adjusting the curve back into the band. For example, if the swr is 4:1 at XX.100 MHz, and 3:1 at XXX.050, and 2:1 at XXX.000, you can see that the curve will probably go to minimum below the band.

When you make any adjustments to the antenna, you need to start a new graph from the beginning. If you make a change and the swr at the band edge gets better, then you are probably going in the right direction. If the swr goes higher, then you are going the wrong way.

The entire graph should move up the band as shown in figure 2, depending on how much change you made. Notice that for each of the curves, there are two points which show the same swr. If you only check one frequency, you may not know which one of these points you measured. You will have to obtain another point on the curve by going up or down in frequency and remeasure. The direction of the slope of the curve will point the way to the resonant frequency.

You can put the resonant frequency directly over your main operating frequency, or you can put the main operating frequency somewhere between the 2:1 swr points. You will have to decide which is preferred. Depending on the antenna curve, many people put the upper 2:1 point at the upper band edge, which leaves the lower 2:1 point to fall wherever it may, with the main operating frequency somewhere between.